ABSTRACT

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Title of the diploma thesis: The capabilities of capillary electrophoresis in the separation of boswellic acids

The main aim of this work was testing of capabilities of capillary electrophoresis for the separation of boswellic acids in *Boswellia serrata* extract as well as in a mixture of standards. The effect of five different buffers and some additive (such as cyclodextrins, organic modifiers or surfactants) in the background electrolyte was tested. The most suitable components of the background electrolyte, were examined at different concentrations to achieve complete separation of boswellic acids. First experiments were carried out in a fused silica capillary with 50 µm internal diameter, 48.5 cm total length and 40 cm effective length, followed by the separations in a longer capillary with 83.5 cm total length and 75 cm effective length. The separation voltage was +30 kV. The UV detection was at 200 nm, 250 nm and 280 nm. The best results were achieved with the background electrolyte composed of 80 mM phosphate buffer at pH 7.0 with 10 % (v/v) of methanol and 80 mg/ml of 2-hydroxypropyl-β-cyclodextrin. With this electrolyte, *Boswellia serrata* extract and the mixture of five boswellic acids were separated into three peaks only. Under these conditions, no separation of α- and β-boswellic acid and 11-keto-β-boswellic acid and 3-*O*-acetyl-β-boswellic acid was achieved. During the method development, the capabilities of capillary electrophoresis coupled to mass spectrometry for the analysis of boswellic acids was evaluated as well.